

What is claimed is:

1. A medical particle irradiation apparatus comprising:

a rotating gantry including an irradiation unit emitting particle beams;

a first frame located within and supported by said rotating gantry such that it can rotate relative to said rotating gantry;

a second frame fixedly located opposite said first frame;

an anti-corotation unit disposed on said rotating gantry, said anti-corotation unit being in contact with both said first and second frames to prevent said first frame from rotating together with said rotating gantry during rotation of said rotating gantry; and

a flexible moving floor located between said first and second frames, said flexible moving floor being engaged with said first and second frames in such a manner as to move freely such that its bottom is substantially level and that it moves as said rotating gantry rotates.

2. The medical particle irradiation apparatus according to claim 1, wherein said first and second frames are each provided with a moving floor guide unit engaged separately with both ends of said moving floor, said moving floor guide unit having a level portion at the bottom.

3. The medical particle irradiation apparatus according to claim 1, wherein said anti-corotation unit is attached to said rotating gantry such that it moves in the direction of rotation

of said rotating gantry as said rotating gantry rotates and that it can rotate on its axis.

4. The medical particle irradiation apparatus according to claim 1, wherein said anti-corotation unit is in mesh or press contact with said first and second frames.

5. The medical particle irradiation apparatus according to claim 4, wherein said anti-corotation unit is in mesh or press contact with said first and second frames outwardly from the center of rotation of said rotating gantry.

6. The medical particle irradiation apparatus according to claim 5, wherein said anti-corotation unit comprises a first rotational element having an uneven portion which meshes with a first uneven portion formed on said first frame, a second rotational element having an uneven portion which meshes with a second uneven portion formed on said second frame, and a shaft member which couples said first and second rotational elements together, wherein said shaft member is attached to said rotating gantry such that said shaft member is free to rotate on its axis.

7. A medical particle irradiation apparatus comprising:
a rotating gantry including an irradiation unit emitting particle beams;

a first frame located within and supported by said rotating gantry such that it can rotate relative to said rotating gantry;

a second frame fixedly located opposite said first frame;

an anti-corotation unit disposed on said rotating gantry, said anti-corotation unit being in contact with both said first and second frames to keep the positions of said first and second frames, located opposite each other, substantially unchanged regardless of the rotation of said rotating gantry; and

a flexible moving floor located between said first and second frames, said flexible moving floor being engaged with said first and second frames in such a manner as to move freely such that its bottom is substantially level, that it forms therein a therapy room into which a therapy bed is slid and that it moves as said rotating gantry rotates.

8. The medical particle irradiation apparatus according to claim 7, wherein said first and second frames are each provided with a moving floor guide unit engaged separately with both ends of said moving floor, said moving floor guide unit having a level portion at the bottom.

9. The medical particle irradiation apparatus according to claim 7, wherein said anti-corotation unit is attached to said rotating gantry such that it moves in the direction of rotation of said rotating gantry as said rotating gantry rotates and that it can rotate on its axis.

10. The medical particle irradiation apparatus according to claim 7, wherein said anti-corotation unit is in mesh or press contact with said first and second frames.

11. The medical particle irradiation apparatus according to claim 10, wherein said anti-corotation unit is in mesh or press contact with said first and second frames outwardly from the center of rotation of said rotating gantry.

12. The medical particle irradiation apparatus according to claim 9, wherein said anti-corotation unit comprises a first rotational element having an uneven portion which meshes with a first uneven portion formed on said first frame, a second rotational element having an uneven portion which meshes with a second uneven portion formed on said second frame, and a shaft member which couples said first and second rotational elements together, wherein said shaft member is attached to said rotating gantry such that said shaft member is free to rotate on its axis.

13. A medical particle irradiation apparatus comprising:

- a rotating gantry including an irradiation unit emitting particle beams;

- a first frame located within and supported by said rotating gantry such that it can rotate relative to said rotating gantry;

- a second frame fixedly located opposite said first frame;

- a frame position retaining unit disposed on said rotating gantry and being in contact with both said first and second frames, said frame position retaining unit moving in the circumferential direction of said second frame as said rotating gantry rotates;
- and

- a flexible moving floor located between said first and second frames, said flexible moving floor being engaged with said

first and second frames in such a manner as to move freely such that its bottom is substantially level, that it forms therein a therapy room into which a therapy bed is slid and that it moves as said rotating gantry rotates, wherein

said frame position retaining unit is disposed on said rotating gantry such that said frame position retaining unit itself can rotate.

14. A medical particle irradiation apparatus comprising:

a rotating gantry carrying an irradiation unit emitting particle beams;

a first ring member located within and supported by said rotating gantry such that it can rotate relative to said rotating gantry;

a second ring member fixedly located across a path of said particle irradiation unit moving in the circumferential direction of said first ring member, from said first ring member;

a position retaining unit disposed on said rotating gantry, said position retaining unit being in contact with both said first and second ring members to keep the positions of said first and second ring members in the circumferential direction substantially unchanged regardless of the rotation of said rotating gantry;

a moving floor guide unit disposed on each of said first and second ring members, said moving floor guide unit having a substantially level portion at the bottom; and

a flexible moving floor located between said first and second ring members, said flexible moving floor moving as said

rotating gantry rotates while being guided by the respective moving floor guide units disposed on said first and second ring members, to form therein a therapy room into which a therapy bed is slid.

15. The medical particle irradiation apparatus according to claim 14, wherein said position retaining unit is attached to said rotating gantry such that it moves in the direction of rotation of said rotating gantry as said rotating gantry rotates and that it can rotate on its axis.

16. The medical particle irradiation apparatus according to claim 14, wherein said position retaining unit is in mesh or press contact with said first and second ring members.

17. The medical particle irradiation apparatus according to claim 16, wherein said position retaining unit is in mesh or press contact with said first and second ring members outwardly from the center of rotation of said rotating gantry.

18. The medical particle irradiation apparatus according to claim 15, wherein said position retaining unit comprises a first rotational element having an uneven portion which meshes with a first uneven portion disposed on said first ring member, a second rotational element having an uneven portion which meshes with a second uneven portion disposed on said second ring member, and a shaft member which couples said first and second rotational elements together, wherein said shaft member is attached to said

rotating gantry such that said shaft member is free to rotate on its axis.

19. The medical particle irradiation apparatus according to claim 18, wherein the distance between the centers of rotation of said first rotational element and of said first ring member is substantially equal to the distance between the centers of rotation of said second rotational element and said second ring member.

20. The medical particle irradiation apparatus according to claim 14, wherein said position retaining unit is disposed on each of a plurality of locations in the circumferential direction of said rotating gantry.

21. The medical particle irradiation apparatus according to claim 15, wherein said position retaining unit comprises a first sprocket which meshes with a first endless link disposed at said first ring member, a second sprocket which meshes with a second endless link disposed at said second ring member, and a shaft member which couples said first and second sprockets together, wherein said shaft member is attached to said rotating gantry such that said shaft member is free to rotate on its axis.

22. An irradiation room for particle beam therapy comprising:
a first ring member located within and relatively rotatably supported by a rotating gantry carrying an irradiation unit emitting particle beams;

a second ring member fixedly located opposite said first ring member;

an anti-corotation unit moving in the direction of rotation of said rotating gantry as said rotating gantry rotates, said anti-corotation unit being in contact with both said first and second ring members to prevent said first ring member from rotating together with said rotating gantry during rotation of said rotating gantry; and

a flexible moving floor located between said first and second ring members, said flexible moving floor being engaged with said first and second frames in such a manner as to move freely such that its bottom is substantially level and that it moves as said rotating gantry rotates.